Scots Pine

Dahurian Birch

Little-leaf Linden

Siberian Larch

Eastern White Pine

Douglas-fir

White Fir

Russian Olive

Blue Spruce

American Mountain-Ash

Manitoba Maple

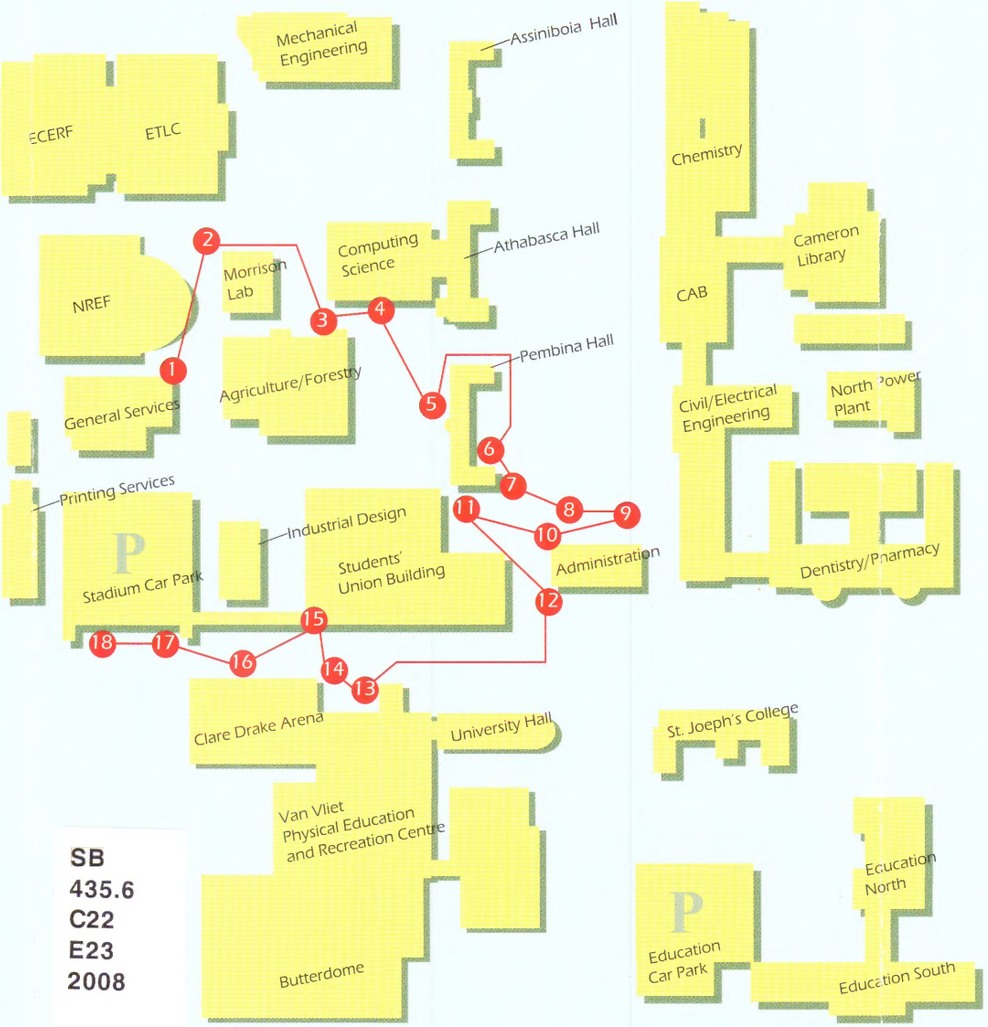
Amur Cherry

Norway Spruce

Sugar Maple

Bur Oak

Jack Pine



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Tour One

White Spruce

Basswood

2008

Gingko

American Elm

Amur Maple

Eastern White Cedar

White Birch

Silver Maple

Green Ash

Trembling Aspen

Balsam Poplar

Siberian Elm

Swiss Stone Pine

Butternut

Balsam Fir

Japanese Tree Lilac

Ohio Buckeye

Lodgepole Pine

Ponderosa Pine

Amur Corkwood

Tour Two

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2008

Tours of the Campus Trees

Trees on Campus

Trees are one of Canada's most important natural resources. Trees provide many social goods (paper and wood for construction) and services (clean air and water, recreation, and wildlife habitat). It is well known that trees provide Canadians with jobs and, as such, are an economic generator important to the country's well-being.

Trees are also an important part of campus. They shade us and our buildings in the summer and reduce the effects of wind in the winter. They add beauty in the form of structure and colour but, more importantly, they create habitats important to the fauna that resides on or visits our campus. It has been said that buildings are monuments to man and that trees are monuments to God, but, regardless of how you view them, they are and always will be an important part of what makes this campus special.

Beautiful and interesting trees also enhance the learning opportunities on campus. More than 200 students every year study the trees on campus. Some of these trees are native to Europe and Asia, others to the U.S.A. Many are from other locations in Canada. But on any day throughout the year these trees are here for our learning pleasure. They stand as testaments to the processes of natural evolution. Some of the trees although young in age are old in genetic history. So, as you view the trees, see them not as beautiful static life forms but as dynamic biologic activity existing in association with humans.

This guide does not attempt to list all of the tree species on campus. Our goal was to make possible a pleasurable and informative unaccompanied outing to view trees, so this guide attempts to be a good introduction to the trees on campus and in the Edmonton area. Also, users of this guide should know that there are a number of cultivars (genetically unique specimens) on campus that defy exact identification. This is not uncommon as many of the species planted as landscape materials have been bred for traits not commonly found in natural environments. Users of the guide should also know that some tree species can be found at many locations throughout campus. However, we show only one location for each species.

You can use this guide in two ways. You can find the tree species of interest and use the number assigned to that species on one of the accompanying tour maps to determine its location. Or you may wish to follow the tours outlined on the maps, identifying trees along the way and reading their descriptions in the guide. Of course when you arrive at a site on the map you may find a number of trees, all of which may be unknown to you. To find your "target tree" use the photographs provided, as well as the description of the species offered in the guide.

We suggest you refer to *Trees in Canada* by John Laird Farrar if you want to know more about a specific tree. There are many good books on tree identification, but we think Farrar's well-illustrated book is the most accurate and complete guide to Canadian trees available. In our opinion it is good enough to display on your coffee table and a great conversation piece. *Trees in Canada* can be purchased at most bookstores in Edmonton and is almost always available from the bookstore on campus, as it is used as a textbook in several courses.

TOUR ONE

(T1) 1. Russian-Olive

Elaeagnus angustifolia L.

A small tree native to Europe and western Asia, the Russian olive is planted in North America for its grey foliage and tolerance to salty soil. The leaves are narrowly oblong, dull green on the upper surface and covered with silvery scales beneath. It is often mistaken for a willow.

(T1) 2. Amur Cherry

Prunus maackii Rupr.

Amur cherry is a native of Asia that is widely planted as an ornamental on the prairies. The papery, peeling, cinnamon-brown bark is particularly attractive, and some people misidentify this species as a birch.

(T1) 3. Jack Pine

Pinus banksiana Lamb.

This pine is identified by its crooked cones and branches, and the short

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needles in pairs. Jack and lodgepole pine are very similar in appearance. As a general rule, jack pine is usually found in sandy areas and the tree foliage is not as dense as that for lodgepole.

(T1) 4. Bur Oak

Quercus macrocarpa Michx.

This is the only eastern oak that comes across the prairies, Bur oak is not native to Alberta but is frequently planted here. It is an attractively shaped tree and the wood is hard and notably heavy. In addition, it is tolerant of air pollution and burning. The fruit is the typical oak acorn, with the nut enclosed in a cap.

(T1) 5. Manitoba Maple

Acer negundo L.

Another eastern species that is common to river valleys in the west, Manitoba maple is the only North American representative of this genus that has compound leaves (3-7 leaflets). Notice on the new twigs a kind of whitish bloom covering the smooth green surface.

(T1) 6. White Fir

Abies concolor (Gord. and Glend.) Lindl.

This western tree species is recognized by its 5-7 cm long silvery green needles (twice the length of local firs). The layered crown makes it a popular ornamental tree. Compare this tree to the balsam fir on Tour 2.

(T1) 7. Scots Pine

Pinus sylvestris L.

Scots pine, a native of Europe and Asia, has the widest distribution of any pine in the world. It is distinctive because of its yellowish-orangey upper bark. There are many different races or forms of Scots pine, some with straight narrow crowns, others with sweeping, broader, aesthetically pleasing crowns. It is a preferred Christmas tree species.

(T1) 8. Dahurian Birch

Betula Davurica Pall.

Introduced to North America in 1883, this rare tree originates from northeast Asia. Distinctive with chunky blocks of bark resembling vermiculite, the Dahurian birch is rarely planted but has potential to reach a height of 20 metres. The branches form a rounded canopy and it has leaves between 5-10 cm long.

(T1) 9. Little-leaf Linden

Tilia cordata Mill.

Little-leaf linden is native to Europe and commonly planted for landscaping purposes. The heart-shaped leaves are 4-8 cm long. The tree produces an abundance of nut-like fruits, which are round and woody and attached to a wing.

(T1) 10 Siberian Larch

Larix sibirica Ledeb.

Much of the boreal forest in Russia is dominated by this species, which is well adapted to dry interior climatic conditions because of its deciduous habit. When planted in Edmonton, Siberian larch seems to think it is in the tropics and grows exceedingly well. When planted individually, these trees typically require a lot of room because of their broad spreading crown. In the spring and summer, notice the short shoots from which grow the whorls of tender needles.

(T1) 11. Eastern White Pine

Pinus strobus L.

Eastern white pine is another Great Lakes–St. Lawrence Valley native. This tree is responsible for many Canadians being here today for it was the tree chosen by the British for masts of large ships in the 1700s and 1800s. This is a "soft" pine and, as such, has 5 needles per needle bundle. The wood is light, yet strong and easily worked. It is commonly used for window mouldings, sashes, and inexpensive furniture.

(T1) 12. Douglas-fir

Pseudotsuga menziesii (Mirb.) Franco

Douglas-fir is only native in a few places in Alberta (the upper Athabasca, North Saskatchewan, Bow, and Crowsnest Rivers, and the Porcupine Hills). It has an extensive distribution along the west coast of Canada. This attractive conifer, which is not a true fir, grows to great size. It is quite valuable and is used for a variety of forest products.

(T1) 13. American Mountain-Ash

Sorbus americana Marsh.

A native of our eastern forest regions, the American mountain-ash is a popular ornamental tree in most western cities. It is easily recognized by its smooth reddish bark and the bright coral-red fruit clusters. These fruits are a favourite food source of many overwintering birds, particularly the Bohemian waxwings. Bud scales are hairless, unlike those of the European mountain-ash, which is also common on campus.

(T1) 14. Sugar Maple

Acer saccharum Marsh.

The sugar maple is a characteristic tree of broadleaf forests in the Maritime Provinces and parts of Ontario and Quebec. Frequently planted as a shade tree, the sugar maple displays spectacular autumn colours. The sugar maple is Canada's national tree, and a stylized version of its leaf is the central feature of the Canadian flag.

(T1) 15. Basswood

Tilia americana L.

Basswood, also known as American linden, is a large tree in its native habitat in the eastern deciduous forest. The wood is light yet strong and dimensionally stable. It is commonly used for wood carving and is found in antique furniture. The fruit is quite distinctive: several individual hard nuts are attached to the middle of a large, leaf-like wing.

(T1) 16. White Spruce

Picea glauca (Moench) Voss

White spruce is our prime native boreal forest conifer. It occurs across Canada and Alaska and into the northern states. Commercially, it is an exceptionally valuable species because of its typically long tracheids, which make for strong paper and an easily workable wood.

(T1) 17. Norway Spruce

Picea abies (L.) Karst.

Norway spruce is a European spruce that is much more widely planted in eastern Canada than it is here. Branches tend to be somewhat pendent. The cones are quite distinctive because of their large size.

(T1) 18. Colorado Blue Spruce

Picea pungens Engelm.

A widely planted ornamental in Canada, Colorado blue spruce is a native of the central Rocky Mountains in the United States. Individual trees range from pure green to a striking blue-green colour. Particular individuals with deep blue coloration and symmetric crown forms are often propagated vegetatively in the nurseries.

TOUR TWO

(T2) 1. Trembling Aspen

Populus tremuloides Michx.

The tree with the largest distribution in North America is familiar to most Albertans. Despite tremendous seed production, aspen rarely reproduce by seed, instead relying on suckers originating from the root system of the original tree. The bark is photosynthetically active, and the stem is rich in nutrients, making this a favourite food of the beaver. The leaf stem (petiole) is flat, which is an unusual trait.

(T2) 2. Butternut

Juglans cinerea L.

This is a tree of the Great Lakes–St. Lawrence valley forest. The fruit, which is a nut that is enclosed in a yellow, sticky, fleshy covering, is edible, making this a favourite of squirrels. Note the large compound leaves with multiple leaflets. At the end of the growing season, the twigs are quite distinctive because of their stoutness, large leaf-scare, and chambered pith.

(T2) 3. Lodgepole Pine

Pinus contorta var. *latifolia* Engelm.

Lodgepole pine is the provincial tree of Alberta and is recognized by most residents because of its tall straight narrow crown. Its wood is used primarily for lumber and pulp. The cones, which typically remain closed on the tree until heat melts the waxy resin holding them closed, can hold many years' supply of seed. The species is exceptionally well adapted to reproduction after frequent fires. Man imitates these conditions when regenerating lodgepole pine by scattering the tree tops around the cut-over area and allowing the warm temperatures near the ground surface to open the cones naturally.

(T2) 4. Ohio Buckeye

Aesculus glabra Willd.

Ohio buckeye has a very small native range in the Ohio River valley. Fairly extensively planted in the Edmonton region, it surprises many botanists because of its ability to survive in this cold, dry climate. It also has a compound leaf (palmately compound). The fruit is a spiny capsule which opens to release a large, shiny, brown seed.

(T2) 5. Swiss Stone Pine

Pinus cembra L.

Swiss stone pine is native to the mountains of Europe. This tree, although not widely planted, is an attractive ornamental because it maintains its narrow columnar form to adulthood. This is a soft pine or white pine (notice the five needles per bundle).

(T2) 6. Green Ash

Fraxinus pennsylvanica var. *subintegerrima* (Vahl) Fern.

The green ash is the most common of the ash genus in the Prairie Provinces. The leaves are composed of 5-11 leaflets in opposite pairs, pinnately compound. The green ash differs from the typical red ash in that its leaf stalks, leaves, and twigs are almost hairless. The fruit is single samara. (samara = dry winged fruit.)

(T2) 7. Ginkgo

Ginkgo biloba L.

Native to China, where it grows naturally only in a few locations and is mostly planted in temple gardens, the ginkgo has broad fan-shaped leaves and plum-like seeds when ripe. It is favoured for city planting in temperate regions because of its freedom from insect pests and disease and its tolerance to pollution.

(T2) 8. American Elm

Ulmus americana L.

A native of our eastern forests, it occurs from eastern Manitoba to Newfoundland. It is a popular ornamental, and is commonly found along boulevards in the older neighbourhoods of all Canadian cities. The bark is distinctively furrowed, and it is easily identified by its vase-shaped bole, usually with two or more stems. This species of elm is adversely affected by Dutch elm disease.

(T2) 9. Amur Maple

Acer Ginnala Maxim

This hardy tree produces crimson red foliage in the fall and is one of the few maples that has fragrant flowers. A small, dense tree that can reach 8 metres, it has a long central lobe on its leaf. Native to China, Manchuria and Japan; this maple was introduced to North America around 1860.

(T2) 10. Eastern White Cedar

Thuja occidentalis L.

Found throughout the Great Lakes – St. Lawrence and Acadian Forest regions, this tree tends to occupy wet areas. It is widely used as an ornamental here. Besides having scale-like leaves which are easily distinguished from the other conifer species, its bark forms long, narrow, flat ridges that give it a shredded appearance. The wood is highly resistant to decay and is therefore used for boat building, shingles, or fence posts.

(T2) 11. White Birch

Betula papyrifera Marsh.

A native Alberta species, the white or paper birch is easily recognized by its smooth, white, peeling bark. Being intolerant of shade, the birch thrives on burned-over and cut-over areas. This tree is water dependent.

(T2) 12. Silver Maple

Acer saccharinum L.

Silver maple is a native species of the eastern deciduous forest, typically occupying riverside and lake margins and swampy areas. Its leaves are deeply dissected. This is one of the soft maples that disperses its fruits early in the season, an adaptation that seems to be related to dispersal by the flood waters in its native habitats.

(T2) 13. Siberian Elm

Ulmus pumila L.

Siberian elm, another exotic to Edmonton, is frequently planted as an ornamental. The leaves are considerably smaller than those of the American elm ,and its crown does not have quite the same distinctive shape; however, this species is frequently favoured where the Dutch elm disease has decimated the native North American elms.

(T2) 14. Japanese Tree Lilac

Syringa reticulate

This smaller tree develops either an oval-rounded or vase-shaped crown. It produces clusters of fragrant creamy-white flowers. The bark of the Japanese tree lilac ranges from grey-brown to a purplish colour and can be quite smooth, sometimes lustrous.

(T2) 15. Amur Corkwood

Phellodendron amurense Rupr.

This small tree is native to eastern Asia and features pinnately compound leaves composed of 5-13 leaflets in a central stalk. The leaves are opposite in arrangement, shiny dark green on the upper surface, aromatic, and have translucent dots. Its bark has a distinctly corky feel.

(T2) 16. Ponderosa Pine

Pinus ponderosa P. Laws exC. Laws

Also known as the western yellow pine, the ponderosa is a hard pine that is a characteristic tree in the southern part of British Columbia's interior. Its needles are typically in bundles of 3, are stiff but flexible, and very sharp. The ponderosa can grow up to 50 metres high and live to be several hundred years old. While bark beetles can cause severe damage, the thick bark on mature trees makes this species fire-resistant.

(T2) 17. Balsam Fir

Abies balsamea (L.) Mill.

Balsam fir is native in the eastern two-thirds of the boreal forest across Canada. It is quite common in Alberta in the Slave Lake area and along the foothills. The firs have smooth grey bark with prominent resin blisters. The needles are flatter than those of spruces. This is a shade-tolerant tree. This tree species is commonly used as a Christmas tree in eastern North America.

(T2) 18. Balsam Poplar

Populus balsamifera L.

This species has a vast range across Canada and is found most often in river valleys or any moist, low-lying ground. The balsam poplar is very similar to the black cottonwood, although with a longer leaf stock (7-10 cm). Frequently planted in rural areas for shelterbelts and windbreaks, the balsam poplar has bark that is greenish brown when young, then becomes gray with age. This tree has large sticky buds.

For more information about the trees on the University of Alberta campus, please contact:

Department of Renewable Resources
751 General Services Building
University of Alberta
Edmonton AB T6G 2H1
(780) 492-4413

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This pamphlet is possible in part because of the cooperation of many individuals who worked hard to bring some of the non-native trees to campus. One such person who deserves special mention is R.H. (Hugh) Knowles, who was a professor of landscape architecture and horticulture in the Department of Plant Science. Dr. Knowles worked extensively with the University grounds people to identify the trees that would survive on campus.

Photo, front cover: Siberian Elm